



TEST REPORT

No. I22N02642-RF UMTS

for

TCL Communication Ltd.

Mobile Phone

Model Name: T507J

FCC ID: 2ACCJB186

with

Hardware Version: 05

Software Version: vVK54

Issued Date: 2023-01-12

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000.

Tel:+86(0)755-33322000, Fax:+86(0)755-33322001

Email: yewu@caict.ac.cn. www.saict.ac.cn



REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22N02642-RF UMTS	Rev.0	1st edition	2023-01-12



CONTENTS

1.	SU	MMARY OF TEST REPORT	ł
1.1.	Т	rest items	ł
1.2.	Т	rest standards	ŀ
1.3.	Т	rest result	ł
1.4.	Т	FESTING LOCATION	ł
1.5.	F	PROJECT DATA	ł
1.6.	S	SIGNATURE	ł
2.	CL	IENT INFORMATION	5
2.1.	A	APPLICANT INFORMATION	5
2.2.	N	MANUFACTURER INFORMATION	5
3.	EQ	UIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	5
3.1.	A	ABOUT EUT	5
3.2.	I	NTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	5
3.3.	I	NTERNAL IDENTIFICATION OF AE USED DURING THE TEST	5
3.4.		GENERAL DESCRIPTION	
4.	RE	FERENCE DOCUMENTS	7
5.		BORATORY ENVIRONMENT	
6.	SU	MMARY OF TEST RESULTS	•
7.	ST	ATEMENT	1
8.		ST EQUIPMENTS UTILIZED	
		A: MEASUREMENT RESULTS	
		DUTPUT POWER	
		IELD STRENGTH OF SPURIOUS RADIATION	
Α	.3 F	REQUENCY STABILITY)
А	.4 0	CCUPIED BANDWIDTH	2
А	.5 E	MISSION BANDWIDTH	5
Α	.6 B	AND EDGE COMPLIANCE	7
Α	.7 C	ONDUCTED SPURIOUS EMISSION61	l
А	.8 P	EAK-TO-AVERAGE POWER RATIO	3



1. SUMMARY OF TEST REPORT

1.1. <u>Test Items</u>

Description	Mobile Phone
Model Name	T507J
Code Name	T507J
Brand Name	TCL
Applicant's name	TCL Communication Ltd.
Manufacturer's Name	TCL Communication Ltd.

1.2. Test Standards

FCC Part 2/22/24/27	10-1-20
	Edition
ANSI C63.26	2015
KDB971168 D01	v03r01

1.3. Test Result

All test items are pass. Please refer to "6 Summary of Test Results" for detail.

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000

1.5. Project Data

Testing Start Date: 2022-07-25

Testing End Date: 2022-09-05

1.6. Signature

Wang Ping (Prepared this test report)

Zhang Hao (Approved this test report)

首款欲

Huang Qiuqin (Reviewed this test report)



2. CLIENT INFORMATION

2.1. Applicant Information

Company Name	TCL Communication Ltd.	
Address	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong	
Contact	Annie Jiang	
Email	nianxiang.jiang@tcl.com	
Tel.	+86 755 36611621	
Fax	+86 755 3661 2000-81722	

2.2. Manufacturer Information

Company Name	TCL Communication Ltd.	
Address	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong	
Address	Science Park, Shatin, NT, Hong Kong	
Contact	Annie Jiang	
Email	nianxiang.jiang@tcl.com	
Tel.	+86 755 36611621	
Fax	+86 755 3661 2000-81722	



3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT

<u>(AE)</u>

3.1. About EUT

Description	Mobile Phone
Model Name	T507J
Code Name	T507J
FCC ID	2ACCJB186
Frequency Bands	WCDMA Band 2,4,5
Antenna	Integrated
Extreme vol. Limits	3.60V to 4.40V (nominal: 3.85V)
Extreme temp. Tolerance	-10°C to +55°C
Condition of EUT as received	No abnormality in appearance
lata: Componenta liat, places raf	or to dooumonto of the manufacture

Note: Components list, please refer to documents of the manufacturer.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Sample Arrival Date
UT03aa	350634890001581	05	vVK54	2022-07-25
UT28aa	353380540003042	05	vVK54	2022-08-16

*EUT ID: is used to identify the test sample in the lab internally.

UT03aa are used for conduction test, UT28aa is used for radiation test.

3.3. Internal Identification of AE used during the test

AE ID*	Descrip	tion	SN
AE1	Battery		/
AE1-1			
Model	Т	Lp048A8	
Manufacture	er D	ongguan Ganfeng Electronics co.,LTD	
Capacity	5	000mAh	
Nominal Vol	tage 3	.85V	
AE1-2			
Model	Т	Lp048A7	
Manufacture	er V	EKEN	
Capacity	5	000mAh	
Nominal Vol	tage 3	.85V	
*AE ID: is use	d to identif	y the test sample in the lab internally.	

3.4. <u>General Description</u>

The Equipment Under Test (EUT) is a model Mobile Phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.



4. <u>REFERENCE DOCUMENTS</u>

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 22	PUBLIC MOBILE SERVICES	10-1-20
		Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY	10-1-20
	MATTERS; GENERAL RULES AND REGULATIONS	Edition
	PERSONAL COMMUNICATIONS SERVICES	10-1-20
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	Edition
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS	10-1-20
TOO Fall 27	SERVICES	Edition
ANSI C63.26	American National Standard for Compliance Testing of	2015
ANGI 003.20	Transmitters Used in Licensed Radio Services	2015
KDB971168 D01	Power Meas License Digital Systems	v03r01



5. LABORATORY ENVIRONMENT

Shielded room did not exceed following limits along the RF testing:

	3
Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz>60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	>2 MΩ
Ground system resistance	<4 Ω

Fully-anechoic chamber did not exceed following limits along the EMC testing

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	<4 Ω
Voltage Standing Wave Ratio (VSWR)	\leq 6 dB, from 1 to 18 GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz



6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Р		Pass
Vardiat Calumn	F	Fail
Verdict Column	NA	Not applicable
	NM	Not measured
Location Column		The test is performed in test location A, B, C or D
Location Column A/B/C/D		which are described in section 1.1 of this report

WCDMA Band II

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/24.232	A.1	Р
2	Field Strength of Spurious Radiation	2.1053/24.238	A.2	Р
3	Frequency Stability	2.1055/24.235	A.3	Р
4	Occupied Bandwidth	2.1049/24.238	A.4	Р
5	Emission Bandwidth	2.1049/24.238	A.5	Р
6	Band Edge Compliance	2.1051/24.238	A.6	Р
7	Conducted Spurious Emission	2.1051/24.238	A.7	Р
8	Peak-to-Average Power Ratio	24.232/KDB971168 D01	A.8	Р

WCDMA Band V

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/22.913	A.1	Р
2	Field Strength of Spurious Radiation	2.1053/22.917	A.2	Р
3	Frequency Stability	2.1055/22.355	A.3	Р
4	Occupied Bandwidth	2.1049/22.917	A.4	Р
5	Emission Bandwidth	2.1049/22.917	A.5	Р
6	Band Edge Compliance	2.1051/22.917	A.6	Р
7	Conducted Spurious Emission	2.1051/22.917	A.7	Р
8	Peak-to-Average Power Ratio	KDB971168 D01	A.8	Р



WCDMA Band IV

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Output Power	2.1046/27.50(d)	A.1	Р
2	Field Strength of Spurious Radiation	2.1053/27.53(h)	A.2	Р
3	Frequency Stability	2.1055/27.54	A.3	Р
4	Occupied Bandwidth	2.1049/27.53(g)	A.4	Р
5	Emission Bandwidth	2.1049/27.53(g)	A.5	Р
6	Band Edge Compliance	2.1051/27.53(h)	A.6	Р
7	Conducted Spurious Emission	2.1051/27.53(h)	A.7	Р
8	Peak-to-Average Power Ratio	27.50(d) /KDB971168 D01	A.8	Р



7. STATEMENT

The Mobile Phone, T507J, manufactured by TCL Communication Ltd. is a variant of T506A for testing.

According to the declaration, reused all test data from No.I22N01585-RF-UMTS. For detail information please check the declaration provided by the manufacturer.

Since the information of samples in this report is provided by the client, the laboratory is not responsible for the authenticity of sample information.

This report takes measured values as criterion of test conclusion. The test conclusion meets the limit requirements.



8. TEST EQUIPMENTS UTILIZED

NO.	Description	TYPE	Manufacture	series number	CAL DUE DATE
1	Test Receiver	ESR7	R&S	101676	2022-11-24
2	BiLog Antenna	3142E	ETS-Lindgren	0224831	2024-05-27
3	Horn Antenna	3117	ETS-Lindgren	00066585	2025-03-15
4	Horn Antenna	QSH-SL-18 -26-S-20	Q-par	17013	2023-01-06
5	Antenna	BBHA 9120D	Schwarzbeck	1593	2022-12-05
6	Antenna	VUBA 9117	Schwarzbeck	207	2023-07-15
7	Antenna	QWH-SL-18 -40-K-SG	Q-par	15979	2023-01-06
8	preamplifier	83017A	Agilent	MY39501110	/
9	Signal Generator	SMB100A	R&S	179725	2022-11-24
10	Fully Anechoic Chamber	FACT3-2.0	ETS-Lindgren	1285	2023-05-29
11	Spectrum Analyzer	FSV40	R&S	101192	2023-01-12
12	Universal Radio Communication Tester	CMU200	R&S	114545	2023-01-12
13	Universal Radio Communication Tester	CMU200	R&S	123210	2022-12-13
14	Spectrum Analyzer	FSU	R&S	101506	2022-12-13
15	Temperature Chamber	SH-241	ESPEC	92007516	2022-10-15
16	DC Power Supply	U3606A	Agilent Technologies	MY50450012	2022-11-13

Test software

ltem	Name	Vesion
Radiated	EMC32	V10.50.40



ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

Reference

FCC: CFR Part 2.1046, 22.913, 24.232, 27.50(d)

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation.

This result contains max output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.

These measurements were done at 3 frequencies, 1852.4 MHz, 1880.0MHz and 1907.6MHz for WCDMA Band II;826.4MHz, 836.6MHz and 846.6MHz for WCDMA Band V and 1712.4MHz, 1732.4MHz and 1752.6MHz for WCDMA Band IV (bottom, middle and top of operational frequency range).

Limit According to FCC Part 2.1046

WCDMA Band II

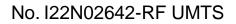
A.1.2.2 Measurement result

QPSK

	СН	Frequency(MHz)	output power(dBm)
WCDMA	9262	1852.4	23.0
(Band II)	9400	1880.0	23.0
	9538	1907.6	23.1

16QAM

	СН	Frequency(MHz)	output power(dBm)
WCDMA	9262	1852.4	22.3
(Band II)	9400	1880.0	22.3
	9538	1907.6	22.4





WCDMA Band V

Measurement result

QPSK

	СН	Frequency(MHz)	output power(dBm)
WCDMA	4132	826.4	23.3
(Band V)	4183	836.6	23.3
	4233	846.6	23.3

16QAM

	СН	Frequency(MHz)	output power(dBm)
WCDMA	4132	826.4	22.5
(Band V)	4183	836.6	22.5
	4233	846.6	22.6

WCDMA Band IV

Measurement result QPSK

	СН	Frequency(MHz)	output power(dBm)
WCDMA	1312	1712.4	23.0
(Band IV)	1412	1732.4	23.0
	1513	1752.6	23.1

16QAM

	СН	Frequency(MHz)	output power(dBm)
WCDMA	1312	1712.4	22.4
(Band IV)	1412	1732.4	22.3
	1513	1752.6	22.4

Note: Expanded measurement uncertainty is U = 0.49dB, k = 1.96



A.1.3 Radiated

A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

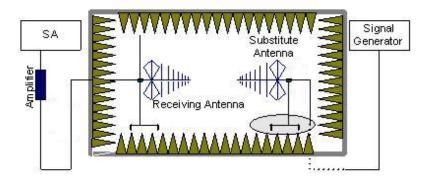
Rule Part 24.232(b) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."Rule Part 22.913(a) specifies " The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

A.1.3.2 Method of Measurement

1. For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, EUT was placed on a 80 cm high non-conductive stand at a 3 meter test distance from the receive antenna. For radiated measurements performed at frequencies above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Receiving antenna was placed on the antenna mast 3 meters from the EUT. For emission measurements. The receiving antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



- 2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
- 3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.





In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

- A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain(dBi) (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test. The measurement results are obtained as described below: Power(EIRP)=P_{Mea} - P_{Ag} - P_{cl} + G_a
- 5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
- 6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dB.



WCDMA Band II-EIRP

Limits

	Burst Peak EIRP (dBm)		
WCDMA Band II	≤33dBm (2W)		

Measurement result

QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)+ P _{Ag} (dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1852.40	-15.12	-29.30	8.10	22.29	33.00	Н
1880.00	-14.75	-29.40	8.10	22.75	33.00	Н
1907.60	-15.11	-29.30	8.10	22.29	33.00	Н

16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)+ P _{Ag} (dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1852.40	-15.21	-29.30	8.10	22.19	33.00	Н
1880.00	-14.84	-29.40	8.10	22.66	33.00	Н
1907.60	-15.22	-29.30	8.10	22.18	33.00	Н

Frequency: 1880.00MHz

Peak EIRP(dBm)= PMea(-14.75dBm)-(Pcl+PAg)(-29.40dB)+Ga (8.10dB) =22.75dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

WCDMA Band V-ERP

Limits

	Burst Peak ERP (dBm)		
WCDMA Band V	≤38.45dBm		

Measurement result

QPSK

Frequency(MHz) P _{Mea} (dBm)		P _{cl} (dB)+	Ga Antenna	Correction(dB)	ERP(dBm)	Limit(dBm)	Polarization
Trequency(iiii iz)	P _{Mea} (dBi) P _{Ag} (dB) Gain(dBi)		Confection(dB)		Ellini(dBill)	FUIdHZallUH	
826.40	-9.03	-33.60	-0.84	2.15	21.58	38.45	V
836.60	-9.83	-33.50	-0.74	2.15	20.79	38.45	V
846.60	-10.31	-33.50	-0.73	2.15	20.31	38.45	V

16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)+ P _{Ag} (dB)	Ga Antenna Gain(dBi)	Correction (dB)	ERP(dBm)	Limit(dBm)	Polarization
826.40	-9.30	-33.60	-0.84	2.15	21.31	38.45	V
836.60	-9.94	-33.50	-0.74	2.15	20.67	38.45	V
846.60	-10.40	-33.50	-0.73	2.15	20.22	38.45	V

Frequency: 826.40MHz

Peak ERP(dBm)= PMea(-9.03dBm)-(Pcl+PAg)(-33.60dB)+Ga (-0.84dB)-2.15dB=21.58dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz



WCDMA Band IV-EIRP

Limits

	Burst Peak EIRP (dBm)		
WCDMA Band IV	≤30.00dBm		

Measurement result

QPSK

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)+ P _{Ag} (dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1712.40	-15.34	-29.60	8.10	22.37	30.00	Н
1732.60	-14.82	-29.50	8.10	22.78	30.00	Н
1752.60	-14.79	-29.50	8.10	22.81	30.00	Н

16QAM

Frequency(MHz)	P _{Mea} (dBm)	P _{cl} (dB)+ P _{Ag} (dB)	Ga Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)	Polarization
1712.40	-15.44	-29.60	8.10	22.26	30.00	Н
1732.60	-14.97	-29.50	8.10	22.63	30.00	Н
1752.60	-14.92	-29.50	8.10	22.68	30.00	Н

Frequency: 1732.60 MHz

Peak EIRP(dBm)= PMea(-14.82dBm)-(Pcl+PAg)(-29.50dB)+Ga (8.10dB)=22.78dBm

ANALYZER SETTINGS: RBW = VBW = 5MHz

Note: The maximum value of expanded measurement uncertainty for this test item is U = 2.72dB(30MHz-3GHz)/3.60dB(3GHz-18GHz)/3.58dB(18GHz-40GHz), k = 2

Note: Both of Vertical and Horizontal polarizations are evaluated, but only the worst case is recorded in this report.



A.2 FIELD STRENGTH OF SPURIOUS RADIATION

Reference

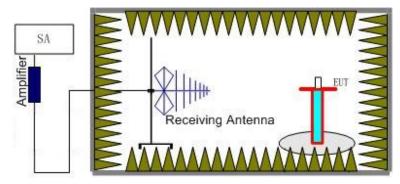
FCC: CFR 2.1053, 22.917, 24.238, 27.53(h).

A.2.1 Measurement Method

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set 1MHz as outlined in Part 24.238, Part 22.917 and Part 27.53. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band II, WCDMA Band V and WCDMA Band IV.

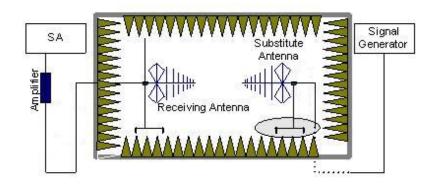
The procedure of radiated spurious emissions is as follows:

1. For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, EUT was placed on a 80 cm high non-conductive stand at a 3 meter test distance from the receive antenna. For radiated measurements performed at frequencies above 1 GHz, EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. Receiving antenna was placed on the antenna mast 3 meters from the EUT. For emission measurements. The receiving antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.



- 2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
- 3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.





In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain(dBi) (G_a) should be recorded after test.
A amplifier should be connected in for the test.
The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.

The measurement results are obtained as described below:

 $Power(EIRP)=P_{Mea} - P_{pl} + G_a$

- 5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
- 6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dB.



A.2.2 Measurement Limit

Part 24.238 , Part 22.917 and Part 27.50 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P) dB$.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of WCDMA Band II (1852.4 MHz, 1880.0MHz and 1907.6MHz), WCDMA Band V(826.4MHz, 836.6MHz and 846.6MHz) and WCDMA Band IV (1712.4MHz, 1732.4MHz and 1752.6MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the WCDMA Band II,WCDMA Band V and WCDMA Band IV into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.



A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
	Low	30MHz-10GHz	Pass
WCDMA Band V	Middle	30MHz-10GHz	Pass
	High	30MHz-10GHz	Pass
	Low	30MHz-20GHz	Pass
WCDMA Band II	Middle	30MHz-20GHz	Pass
	High	30MHz-20GHz	Pass
	Low	30MHz-20GHz	Pass
WCDMA Band IV	Middle	30MHz-20GHz	Pass
	High	30MHz-20GHz	Pass

A.2.5 Sweep Table

Working	Subrange (GHz)	RBW	VBW	Sweep time (s)
Frequency	Subrange (GHZ)		VBW	Sweep time (3)
	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
WCDMA Band V	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~10	1 MHz	3 MHz	3
	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
WCDMA Band II	5~8	1 MHz	3 MHz	3
	8~11	1 MHz	3 MHz	3
	11~14	1 MHz	3 MHz	3
	14~18	1 MHz	3 MHz	3
	18~20	1 MHz	3 MHz	2
	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
WCDMA Band IV	5~8	1 MHz	3 MHz	3
	8~11	1 MHz	3 MHz	3
	11~14	1 MHz	3 MHz	3
	14~18	1 MHz	3 MHz	3
	18~20	1 MHz	3 MHz	3



Fraguanay/(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization							
Frequency(IVIEZ)	m)	loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation							
7405.13	-42.23	1.90	12.00	-32.13	-13.00	V							
16968.75	-45.64	2.90	16.50	-32.04	-13.00	Н							
17182.50	-44.04	2.90	14.50	-32.44	-13.00	Н							
17503.13	-40.43	2.90	12.80	-30.53	-13.00	Н							
17590.63	-40.07	3.30	12.80	-30.57	-13.00	Н							
17827.50	-40.72	3.60	12.80	-31.52	-13.00	Н							
	16968.75 17182.50 17503.13 17590.63	Frequency(MHz) m) 7405.13 -42.23 16968.75 -45.64 17182.50 -44.04 17503.13 -40.43 17590.63 -40.07	Frequency(MHz)m)loss7405.13-42.231.9016968.75-45.642.9017182.50-44.042.9017503.13-40.432.9017590.63-40.073.30	Frequency(MHz)m)lossGain(dBi)7405.13-42.231.9012.0016968.75-45.642.9016.5017182.50-44.042.9014.5017503.13-40.432.9012.8017590.63-40.073.3012.80	Frequency(MHz)m)lossGain(dBi)EIRP(dBm)7405.13-42.231.9012.00-32.1316968.75-45.642.9016.50-32.0417182.50-44.042.9014.50-32.4417503.13-40.432.9012.80-30.5317590.63-40.073.3012.80-30.57	Frequency(MHz)m)lossGain(dBi)EIRP(dBm)m)7405.13-42.231.9012.00-32.13-13.0016968.75-45.642.9016.50-32.04-13.0017182.50-44.042.9014.50-32.44-13.0017503.13-40.432.9012.80-30.53-13.0017590.63-40.073.3012.80-30.57-13.00							

WCDMA BAND II Mode Channel 9662/1932.4MHz (QPSK)

WCDMA BAND II Mode Channel 9800/1960MHz (QPSK)

Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization
	m)	loss	Gain(dBi)	EIRP(dBm)	m)	FUIAIIZALIUII
16985.00	-45.72	2.90	16.50	-32.12	-13.00	Н
17303.75	-43.05	3.20	14.50	-31.75	-13.00	Н
17490.63	-41.77	2.90	14.50	-30.17	-13.00	Н
17620.63	-39.59	3.30	12.80	-30.09	-13.00	Н
17833.75	-39.37	3.60	12.80	-30.17	-13.00	Н
17991.88	-38.28	3.20	12.80	-28.68	-13.00	Н

WCDMA BAND II Mode Channel 9938/1987.6MHz (QPSK)

Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization
	m)	loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation
16914.38	-45.73	2.90	16.50	-32.13	-13.00	Н
17123.13	-44.02	2.90	14.50	-32.42	-13.00	Н
17295.00	-43.32	3.20	14.50	-32.02	-13.00	Н
17525.00	-40.21	2.90	12.80	-30.31	-13.00	Н
17620.63	-40.43	3.30	12.80	-30.93	-13.00	Н
17689.38	-40.68	3.30	12.80	-31.18	-13.00	Н



Fraguanay (MHz)	1Hz) P _{Mea} (dBm)	Path	Antenna	Peak	Limit(dB	Polarization
Frequency(MHz)		loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation
7406.63	-40.32	1.90	12.00	-30.22	-13.00	V
16990.63	-45.38	2.90	16.50	-31.78	-13.00	Н
17301.88	-43.13	3.20	14.50	-31.83	-13.00	Н
17456.88	-42.29	2.90	14.50	-30.69	-13.00	Н
17611.25	-38.49	3.30	12.80	-28.99	-13.00	Н
17788.75	-40.44	3.60	12.80	-31.24	-13.00	Н

WCDMA BAND II Mode Channel 9662/1932.4MHz (16QAM)

WCDMA BAND II Mode Channel 9800/1960MHz (16QAM)

Eroquopov(MHz)	D (dDm)	Path	Antenna	Peak	Limit(dB	Polarization
Frequency(MHz)	P _{Mea} (dBm)	loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation
16962.50	-44.89	2.90	16.50	-31.29	-13.00	Н
17118.75	-43.65	2.90	14.50	-32.05	-13.00	Н
17276.25	-43.10	3.20	14.50	-31.80	-13.00	Н
17514.38	-39.98	2.90	12.80	-30.08	-13.00	Н
17592.50	-39.10	3.30	12.80	-29.60	-13.00	Н
17788.75	-40.36	3.60	12.80	-31.16	-13.00	Н

WCDMA BAND II Mode Channel 9938/1987.6MHz (16QAM)

	requency(MHz) P _{Mea} (dBm)	Path	Antenna	Peak	Limit(dB	Polarization
		loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation
16936.25	-45.38	2.90	16.50	-31.78	-13.00	Н
17180.00	-44.11	2.90	14.50	-32.51	-13.00	Н
17367.50	-43.44	3.20	14.50	-32.14	-13.00	Н
17513.13	-40.62	2.90	12.80	-30.72	-13.00	Н
17617.50	-39.66	3.30	12.80	-30.16	-13.00	Н
17840.00	-40.41	3.60	12.80	-31.21	-13.00	Н



1				_			
	Frequency(MHz)	P _{Mea} (dBm)	Path	Antenna	Peak	Limit(dB	Polarization
	Frequency(MHZ)	r _{Mea} (ubiii)	loss	Gain(dBi)	ERP(dBm)	m)	FUIAIIZALIUII
	8410.50	-52.61	1.80	11.30	-45.26	-13.00	Н
	9102.75	-51.72	2.20	11.60	-44.47	-13.00	Н
	9294.38	-50.56	2.00	11.60	-43.11	-13.00	Н
	9476.13	-50.96	2.10	11.60	-43.61	-13.00	V
	9737.25	-51.15	2.20	11.20	-44.30	-13.00	Н
	9788.13	-51.46	2.30	11.20	-44.71	-13.00	Н

WCDMA BAND V Mode Channel 4357/871.4 MHz (QPSK)

WCDMA BAND V Mode Channel 4408/881.6MHz (QPSK)

Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization
	m)	loss	Gain(dBi)	ERP(dBm)	m)	Polanzation
7120.50	-52.71	1.90	12.00	-44.76	-13.00	Н
7319.63	-52.86	1.70	12.00	-44.71	-13.00	Н
9296.13	-50.17	2.00	11.60	-42.72	-13.00	Н
9468.88	-51.15	2.10	11.60	-43.80	-13.00	V
9759.75	-51.09	2.20	11.20	-44.24	-13.00	Н
9818.50	-51.40	2.30	11.20	-44.65	-13.00	Н

WCDMA BAND V Mode Channel 4458/891.6MHz (QPSK)

	Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization				
		m)	loss	Gain(dBi)	ERP(dBm)	m)	FUIAIIZALIUIT				
	7123.13	-52.66	1.90	12.00	-44.71	-13.00	Н				
	8431.50	-51.60	1.80	11.30	-44.25	-13.00	Н				
	9301.63	-50.42	2.00	11.60	-42.97	-13.00	Н				
	9471.00	-51.06	2.10	11.60	-43.71	-13.00	V				
	9733.50	-50.67	2.20	11.20	-43.82	-13.00	Н				
	9787.25	-50.94	2.30	11.20	-44.19	-13.00	Н				



Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization
	m)	loss	Gain(dBi)	ERP(dBm)	m)	FUIAIIZALIUIT
8458.13	-52.40	1.80	11.30	-45.05	-13.00	Н
9097.75	-52.13	2.20	11.60	-44.88	-13.00	Н
9299.75	-50.62	2.00	11.60	-43.17	-13.00	Н
9473.75	-51.51	2.10	11.60	-44.16	-13.00	V
9735.38	-51.34	2.20	11.20	-44.49	-13.00	Н
9779.00	-51.18	2.30	11.20	-44.43	-13.00	Н

WCDMA BAND V Mode Channel 4357/871.4 MHz (16QAM)

WCDMA BAND V Mode Channel 4408/881.6MHz (16QAM)

Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization
	m)	loss	Gain(dBi)	ERP(dBm)	m)	FUIANZALIUN
8452.13	-51.87	1.80	11.30	-44.52	-13.00	Н
9098.75	-51.70	2.20	11.60	-44.45	-13.00	Н
9300.25	-51.07	2.00	11.60	-43.62	-13.00	Н
9474.25	-51.39	2.10	11.60	-44.04	-13.00	V
9736.88	-51.66	2.20	11.20	-44.81	-13.00	Н
9796.38	-50.74	2.30	11.20	-43.99	-13.00	Н

WCDMA BAND V Mode Channel 4458/891.6MHz (16QAM)

Frequency(MHz)	PMea(dB	Path	Antenna	Peak	Limit(dB	Polarization
	m)	loss	Gain(dBi)	ERP(dBm)	m)	Polanzation
8423.63	-52.28	1.80	11.30	-44.93	-13.00	Н
9100.50	-51.79	2.20	11.60	-44.54	-13.00	Н
9226.75	-50.94	2.10	11.60	-43.59	-13.00	Н
9475.25	-51.22	2.10	11.60	-43.87	-13.00	V
9728.25	-51.35	2.20	11.20	-44.50	-13.00	Н
9785.38	-51.05	2.30	11.20	-44.30	-13.00	Н



	Frequency(MHz)	P _{Mea} (dBm)	Path	Antenna	Peak	Limit(dB	Polarization
			loss	Gain(dBi)	EIRP(dBm)	m)	Foianzation
	3422.63	-42.61	1.20	11.50	-32.31	-13.00	Н
	16952.50	-45.33	2.90	16.50	-31.73	-13.00	Н
	17278.75	-43.31	3.20	14.50	-32.01	-13.00	Н
	17457.50	-42.16	2.90	14.50	-30.56	-13.00	Н
	17551.88	-40.21	2.90	12.80	-30.31	-13.00	Н
	17773.13	-40.69	3.60	12.80	-31.49	-13.00	Н

WCDMA BAND IV Mode Channel 1537/1712.4MHz (QPSK)

WCDMA BAND IV Mode Channel 1638/1732.6MHz (QPSK)

Eroguopov(MHz)		Path	Antenna	Peak	Limit(dB	Polarization
Frequency(MHz)	P _{Mea} (dBm)	loss	Gain(dBi)	EIRP(dBm)	m)	Polarization
16941.88	-45.15	2.90	16.50	-31.55	-13.00	Н
17159.38	-44.12	2.90	14.50	-32.52	-13.00	Н
17226.88	-43.41	3.20	14.50	-32.11	-13.00	Н
17524.38	-40.53	2.90	12.80	-30.63	-13.00	Н
17576.25	-39.67	3.30	12.80	-30.17	-13.00	Н
17837.50	-39.61	3.60	12.80	-30.41	-13.00	Н

WCDMA BAND IV Mode Channel 1738/1752.6MHz (QPSK)

	D (dDm)	Path	Antenna	Peak	Limit(dB	Polarization
Frequency(MHz)	P _{Mea} (dBm)	loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation
16974.38	-45.19	2.90	16.50	-31.59	-13.00	Н
17129.38	-43.43	2.90	14.50	-31.83	-13.00	Н
17271.88	-43.16	3.20	14.50	-31.86	-13.00	Н
17463.13	-42.20	2.90	14.50	-30.60	-13.00	Н
17615.63	-39.73	3.30	12.80	-30.23	-13.00	Н
17830.00	-40.64	3.60	12.80	-31.44	-13.00	Н



Frequency(MHz)	P _{Mea} (dBm)	Path	Antenna	Peak	Limit(dB	Polarization				
Frequency(MHZ)	r Mea(ubiii)	Mea(UDIII)	r Mea(ubiii)	r Mea(ubiii)	Mea(ubiii)	loss	Gain(dBi)	EIRP(dBm)	m)	FUIdHZaliUH
3422.63	-38.76	1.20	11.50	-28.46	-13.00	V				
16999.38	-44.26	2.90	16.50	-30.66	-13.00	Н				
17288.13	-41.60	3.20	14.50	-30.30	-13.00	Н				
17479.38	-40.17	2.90	14.50	-28.57	-13.00	Н				
17587.50	-38.68	3.30	12.80	-29.18	-13.00	Н				
17766.25	-38.23	3.60	12.80	-29.03	-13.00	Н				

WCDMA BAND IV Mode Channel 1537/1712.4MHz (16QAM)

WCDMA BAND IV Mode Channel 1638/1732.6MHz (16QAM)

Fraguanay (MHz)	D (dDm)	Path	Antenna	Peak	Limit(dB	Polarization
Frequency(MHz)	P _{Mea} (dBm)	loss	Gain(dBi)	EIRP(dBm)	m)	Polarization
16975.00	-44.72	2.90	16.50	-31.12	-13.00	Н
17207.50	-42.66	2.90	14.50	-31.06	-13.00	Н
17290.00	-41.84	3.20	14.50	-30.54	-13.00	Н
17459.38	-41.01	2.90	14.50	-29.41	-13.00	Н
17526.25	-39.19	2.90	12.80	-29.29	-13.00	Н
17759.38	-38.83	3.60	12.80	-29.63	-13.00	Н

WCDMA BAND IV Mode Channel 1738/1752.6MHz ((16QAM)

Fraguanay (MHz)	D (dDm)	Path	Antenna	Peak	Limit(dB	Polarization
Frequency(MHz)	P _{Mea} (dBm)	loss	Gain(dBi)	EIRP(dBm)	m)	Polanzation
3502.50	-42.06	1.10	12.20	-30.96	-13.00	Н
16976.25	-45.35	2.90	16.50	-31.75	-13.00	Н
17096.88	-43.16	2.90	14.50	-31.56	-13.00	Н
17458.13	-41.30	2.90	14.50	-29.70	-13.00	Н
17620.00	-39.69	3.30	12.80	-30.19	-13.00	Н
17775.63	-39.86	3.60	12.80	-30.66	-13.00	Н

Note: The maximum value of expanded measurement uncertainty for this test item is U =

2.72dB(30MHz-3GHz)/3.60dB(3GHz-18GHz)/3.58dB(18GHz-40GHz), k = 2



A.3 FREQUENCY STABILITY

Reference

FCC: CFR Part 2.1055, 22.355, 24.235, 27.54

A.3.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMW500

- 1. Measure the carrier frequency at room temperature.
- 2. Subject the EUT to overnight soak at -30° C.
- 3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on mid channel of each band, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
- 4. Repeat the above measurements at 10[°]C increments from -30[°]C to +50[°]C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
- 5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
- 6. Subject the EUT to overnight soak at +50 $^{\circ}$ C.
- 7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
- 8. Repeat the above measurements at 10[°]C increments from +50[°]C to -30[°]C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
- 9. At all temperature levels hold the temperature to +/- 0.5° during the measurement procedure.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of the lower, higher and nominal voltage. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress.



A.3.2 Measurement results WCDMA Band II

Frequency Error vs Voltage

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20				Olisel(HZ)	Frequency enor(ppin)
50				-7.32	0.0078
40				-8.46	0.0090
30				-3.38	0.0036
10	3.85	1850.500	1909.350	-6.34	0.0067
0				-4.16	0.0044
-10				-6.18	0.0066
-20				-5.69	0.0061
-30				-3.72	0.0040

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	1950 500	1000 250	-4.55	0.0048
4.40	20	1850.500	1909.350	-1.87	0.0020

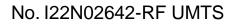
WCDMA Band IV

Frequency Error vs Voltage-QPSK

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offect/Uz)	
20				Offset(Hz)	Frequency error(ppm)
50				0.80	0.0009
40				-2.81	0.0032
30				-3.91	0.0045
10	3.85	1710.500	1754.280	-4.46	0.0052
0				-5.39	0.0062
-10				-6.49	0.0075
-20				-7.61	0.0088
-30				-2.70	0.0031

Frequency Error vs Voltage

Voltage(V)	Temperature(°C)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	1710.500	1754.280	-2.07	0.0024
4.40	20	1710.500	1754.200	-2.62	0.0030





WCDMA Band V Frequency Error vs Voltage-QPSK

Temperature(°C)	Voltage(V)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
20				Olisel(HZ)	Frequency enor(ppm)
50				-5.95	0.0142
40				-4.27	0.0102
30				-2.85	0.0068
10	3.85	824.700	848.300	-2.90	0.0069
0				-2.65	0.0063
-10				-2.49	0.0060
-20				-1.62	0.0039
-30				-2.15	0.0051

Frequency Error vs Voltage

Voltage(V)	Temperature(℃)	FL(MHz)	FH(MHz)	Offset(Hz)	Frequency error(ppm)
3.60	20	004 700	040 200	-1.91	0.0046
4.40	20	824.700	848.300	-3.03	0.0072

Expanded measurement uncertainty is 10Hz, k = 2



A.4 OCCUPIED BANDWIDTH

Reference

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53(g).

A.4.1 Occupied Bandwidth Results

Occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the US Cellular/PCS frequency bands. The table below lists the measured 99% BW. Spectrum analyzer plots are included on the following pages.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (i.e., two to five times the OBW).

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.

c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least 10log (OBW / RBW) below the reference level.

e) Set the detection mode to peak, and the trace mode to max hold.

d) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.



WCDMA Band II (99% BW)-QPSK

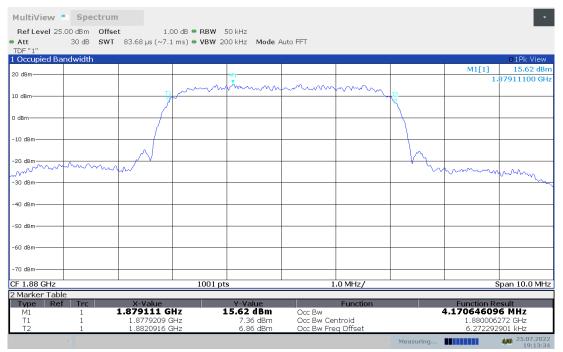
Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1852.4	4.189
1880.0	4.171
1907.6	4.153

WCDMA Band II

Channel 9262-Occupied Bandwidth (99% BW)



Channel 9400-Occupied Bandwidth (99% BW)



Channel 9538-Occupied Bandwidth (99% BW)

©Copyright. All rights reserved by SAICT.



MultiView Spectrum									
Ref Level 25	00 dBm Offse	t 1.0	10 dB = RBW _ 5	50 kHz					
Att	30 dB SWT	83.68 µs (~7.1	ms) - VBW 20	00 kHz Mode /	Auto FFT				
TDF "1"			<i>,</i>						
1 Occupied Ba	ndwidth								●1Pk View
20 dBm								M1[1]	15.93 dBm
20 000				X				1.	90671100 GHz
		T1	mm	Murran	mm	man	T2		
10 dBm		7	~			,,	W7		
		/ ا							
0 dBm									
-10 dBm							<u> </u>		
-20 dBm									
mmm	horno	mond					1 V J		
							"hr	mm	ma
-30 dBm									
									Ĭ
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
-70 asm									
CF 1.9076 GH	z		1001 pt	s	1	.0 MHz/			pan 10.0 MHz
2 Marker Tabl	le								
Type Re	f Trc	X-Value		Y-Value		Function		Function Re	esult
M1	1			L5.93 dBm	Occ Bw			4.15316257	1 MHz
T1	1	1.9055188 GHz		6.95 dBm	Occ Bw Centroid			1.907595	
T2	1	1.909672 GHz 7.07 dBm		Occ Bw Freq Offset			-4.612115		
							Measuring		25.07.2022 19:14:09

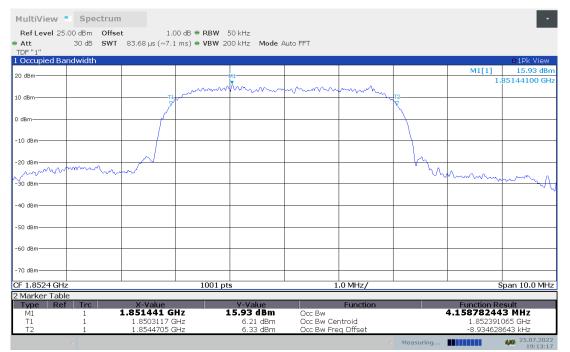


WCDMA Band II (99% BW)-16QAM

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)				
1852.4	4.159				
1880.0	4.161				
1907.6	4.166				

WCDMA Band II

Channel 9262-Occupied Bandwidth (99% BW)



Channel 9400-Occupied Bandwidth (99% BW)



Channel 9538-Occupied Bandwidth (99% BW)

©Copyright. All rights reserved by SAICT.





MultiView	Spectrum	1							-
Ref Level 25	.00 dBm Offse	t 1.0	10 dB 🖷 RBW 🛛 5	50 kHz					
Att	30 dB SWT	83.68 µs (~7.1	ms) = VBW 20	00 kHz Mode /	Auto FFT				
TDF "1"									
1 Occupied Ba	ndwidth				_				●1Pk View
20 dBm-								M1[1]	15.61 dBm
20 asm-					MI			1.	90818900 GHz
			mm	mon	mm	moning			
10 dBm		 ✓	w.			<i>بر</i>	12- N7		
		/					7		
0 dBm									
-10 dBm									
-20 dBm		\sim							
a mood	mmn	and					V \		
man	~~ • •							mon	hamma.
-30 dBm									and the second
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
CF 1.9076 GH	Z		1001 pt	s	1	.0 MHz/			Span 10.0 MHz
2 Marker Tabl									
Type Re		X-Value		Y-Value		Function		Function Re	esult
M1	1			15.61 dBm	Occ Bw			4.16594992	
T1 T2	1			6.87 dBm 6.39 dBm	Occ Bw Centroid Occ Bw Freg Offset			1.907597 -2.405189	
14	1	1.90900000	112	0.59 UDIT	OCC DW HE				25.07.2022
							Measuring		19:14:28



WCDMA Band V(99% BW)-QPSK

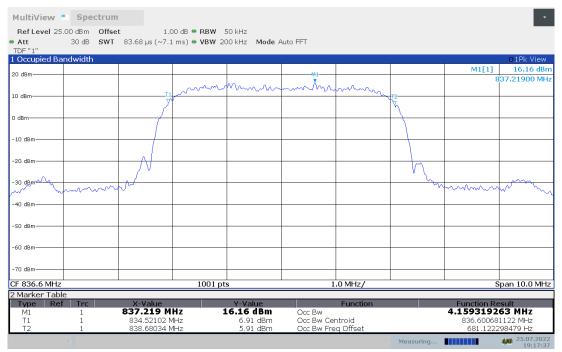
Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
826.4	4.169
836.6	4.159
846.6	4.170

WCDMA Band V

Channel 4132-Occupied Bandwidth (99% BW)



Channel 4183-Occupied Bandwidth (99% BW)



Channel 4233-Occupied Bandwidth (99% BW)





MultiView	 Spectrum 								-
Ref Level 25	.00 dBm Offse	t 1.0	0 dB = RBW 3	50 kHz					
🖷 Att	30 dB SWT	83.68 µs (~7.1	ms) = VBW 20	00 kHz Mode A	Auto FFT				
TDF "1"			<i>.</i>						
1 Occupied Ba	ndwidth			I	1	1		1	●1Pk View
20 dBm					M-1			M1[1]	15.74 dBm
					X			8	47.20900 MHz
10 dBm		т1	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	·····	mon	mm	то		
TO OBII		7					ÿ		
0.40.00							\mathcal{A}		
0 dBm									
10.10									
-10 dBm									
-20 dBm							In		
	mm	min					V.C		. 0. 0
-90 dBm							5/22		www.
									~
-40 dBm									
-50 dBm									
-60 dBm									
-70 dBm									
CF 846.6 MHz			1001 pt	s	1	.0 MHz/		5	pan 10.0 MHz
2 Marker Tabl		X-Value		Y-Value		Function		Function Re	and the second se
Type Ref	f Trc	847.209 M	H7 1	5.74 dBm	Occ Bw	Function		4.1698575	
T1	1	844.49195 M		6.91 dBm	Occ Bw Ce	ntroid		846.57688	
T2	1	848.66181 M	1Hz	6.41 dBm	Occ Bw Fre	eq Offset		-23.11831	
	v					~	Measuring		25.07.2022
									19:18:16

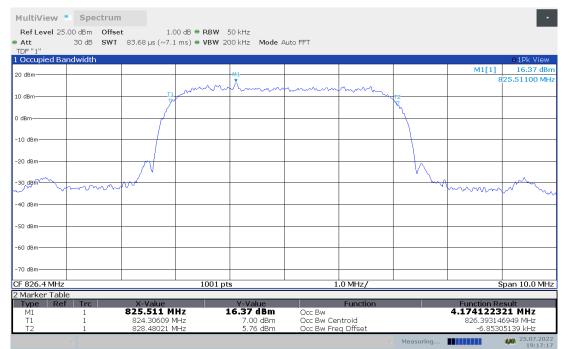


WCDMA Band V(99% BW)-16QAM

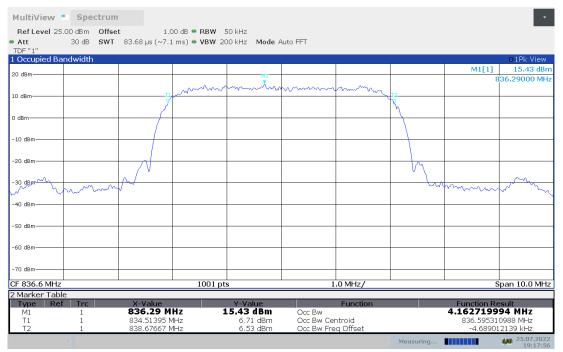
Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
826.4	4.174
836.6	4.163
846.6	4.163

WCDMA Band V

Channel 4132-Occupied Bandwidth (99% BW)



Channel 4183-Occupied Bandwidth (99% BW)



Channel 4233-Occupied Bandwidth (99% BW)





MultiView	Spectrum								
	00 dBm Offse		10 dB = RBW 5	50 kHz					
 Att 		83.68 µs (~7.1			Auto FFT				
TDF "1"									
1 Occupied Ba	ndwidth								o1Pk View
20 dBm				-141-				M1[1]	16.17 dBm 345.71100 MHz
			m	Amm	mm	mmm			845.71100 MHz
10 dBm		T1	\sim			man my	12		
							Γ.		
0 dBm		((
		/							
-10 dBm							+ \		
-20 dBm									
-30/dBm		and							
-30/dém								howwwwh	-
									L V
-40 dBm									
-50 dBm									
-60 dBm	<u> </u>								
-70 dBm									
CF 846.6 MHz			1001 pt	s	1	.0 MHz/			Span 10.0 MHz
2 Marker Table									
Type Ref		X-Value		Y-Value		Function		Function R	esult
M1 T1	1	845.711 M 844.50147 M		L 6.17 dBm 6.79 dBm	Occ Bw Occ Bw Cer	ptroid		4.1626752 846.58280	
T2	1	848.66415 M		6.41 dBm	Occ Bw Fre				73699 kHz
	*						Measuring		25.07.2022 19:18:36



WCDMA Band IV(99% BW)-QPSK

Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1712.4	4.166
1732.4	4.171
1752.6	4.161

WCDMA Band IV

Channel 1312-Occupied Bandwidth (99% BW)



Channel 1412-Occupied Bandwidth (99% BW)



Channel 1513-Occupied Bandwidth (99% BW)



MultiView	 Spectrum 	1							-
Ref Level 25	5.00 dBm Offse	et 1.0	00 dB 🗢 RBW - 5	50 kHz					
 Att 	30 dB SWT	83.68 µs (~7.1	ms) 🗢 VBW 20	00 kHz Mode #	Auto FFT				
TDF "1"	1. 1. 1.1								- 101 11
1 Occupied Ba	andwidth					1	1		o 1Pk View
20 dBm				M1				M1[1]	16.06 dBm
			A ma	man in march		m-, mm		1.	75171100 GHz
10 dBm		T1	~~~~~~	1		a and a contraction of the	,T2		
		<u>۶</u>	ſ				Υ.		
0 dBm									
0 ubiii									
-10 dBm									
-20 dBm		<u> </u>					L/		
mm	mon	Inn						M	
-30 dBm							w.	had with	www.
									~~~/v
-40 dBm									
-50 dBm									
50 dbiii									
-60 dBm									
-60 UBM									
-70 dBm									
CF 1.7526 GH	z		1001 pt	s	1	.0 MHz/		S	pan 10.0 MHz
2 Marker Tab			· · · · ·			· · ·			•
Type Re	f Trc	X-Value		Y-Value		Function		Function Re	esult
M1	1	1.751711 G		L6.06 dBm	Occ Bw			4.16096757	
T1	1	1.7505117 @		7.01 dBm	Occ Bw Ce			1.752592	
T2	1	1.7546727 G	ITZ	6.50 dBm	Occ Bw Fre			-7.831129	
							Measuring		25.07.2022 19:16:13

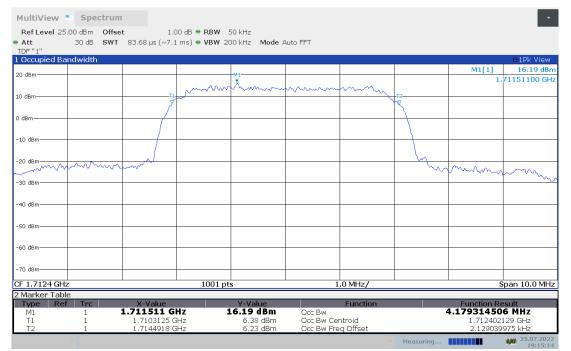


### WCDMA Band IV(99% BW)-16QAM

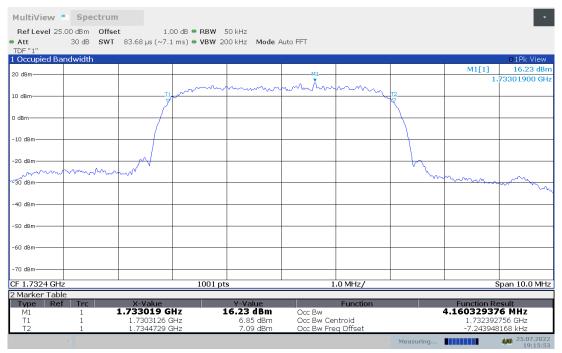
Frequency(MHz)	Occupied Bandwidth (99% BW)(MHz)
1712.4	4.179
1732.4	4.160
1752.6	4.172

### WCDMA Band IV

### Channel 1312-Occupied Bandwidth (99% BW)



## Channel 1412-Occupied Bandwidth (99% BW)



# Channel 1513-Occupied Bandwidth (99% BW)



D d8m     M1[1]     16       D d8m     1     1.75171       d8m     1     1       10 d8m     1     1	Ref Level 25	.00 dBm Offse	et 1.00	d d B 🗢 R B W 🛛 S	50 kHz					
Occupied Bandwidth         Off           1 dBm         M1[1]         16           1 dBm         1         1.75171           dBm         1         1.751711           GBm         1         1.751711           GBm         1         1.751711           GBm         1         1.751711		30 dB SWT	83.68 µs (~7.1	ms) <b>= VBW</b> 20	00 kHz <b>Mode</b> Au	uto FFT				
dBm     M1[1]     16       dBm     T     1.75171       dBm     GBm     GBm       0 dBm     GBm     GBm       1.7526 GHz     1001 pts     1.0 MHz/       Span In     Span In       Varker Table     Y-Value       Type     Ref     Trc       X-Value     Y-Value       M1     1     1.751711 GHz       16.24 dBm     Occ Bw     4.172446187 MH		an also diabata								e ( DL ) //
dBm     1.75171       dBm     1.751711       GBm     1.751711	Jccupied Ba	inawiath								⊙1Pk Viev
dBm     Image: Constraint of the second of the	dBm				M1-					16.24 dB
dBm         Th         N         D         T2           iBm         1         1         1.751711 GHz         16.24 dBm         Occ Bw         Function Result					M	0.00			1	/51/1100 G
iBm	dBm		т1.	man	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~	mon	T2-		
D dBm	doni		<b>∑</b>					N-M		
dBm     dBm <td>_</td> <td></td> <td>  ( </td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	_		(							
dBm     dBm <td>Bm</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td>	Bm							1		
dBm										
	I dBm									+
0 dBm         0 dBm <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>										
dBm     dBm <td>dBm</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	dBm									
dBm         dBm         dBm         dBm         dBm           rdBm         rdBm         rdBm         rdBm         rdBm         rdBm           rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm           rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm         rdBm	anna	mm	Land I							
dBm     dBm <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>lin</td> <td>manna</td> <td>m</td>								lin	manna	m
Indem         Index         Index <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>m in</td></th<>										m in
Indem         Index         Index <th< td=""><td>d9m</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	d9m									
dBm         Image: Constraint of the second sec	ubili									
dBm         Image: Constraint of the second sec										
dBm         dBm         1.001 pts         1.0 MHz/         Span 1001 pts           1.7526 GHz         1001 pts         1.0 MHz/         Span 1001 pts         Span 1001 pts           larker Table         ype         Ref         Trc         X-Value         Y-Value         Function Result           M1         1         1.751711 GHz         16.24 dBm         Occ Bw         4.172446187 MH	dBm-									
dBm         dBm         1.001 pts         1.0 MHz/         Span 1001 pts           1.7526 GHz         1001 pts         1.0 MHz/         Span 1001 pts         Span 1001 pts           larker Table         ype         Ref         Trc         X-Value         Y-Value         Function Result           M1         1         1.751711 GHz         16.24 dBm         Occ Bw         4.172446187 MH										
1.7526 GHz         1001 pts         1.0 MHz/         Span 10           tarker Table         ype         Ref         Trc         X-Value         Y-Value         Function         Function Result           M1         1         1.751711 GHz         16.24 dBm         Occ Bw         4.172446187 MH	dBm									+
Instance										
Itarker Table         Ype         Ref         Trc         X-Value         Yunction         Function Result           M1         1         1.751711 GHz         16.24 dBm         Occ Bw         4.172446187 MH	dBm									
Marker Table         Ype         Ref         Trc         X-Value         Yunction         Function Result           M1         1         1.751711 GHz         16.24 dBm         Occ Bw         4.172446187 MH	1 7596 611			1001 ==		1			L	Coop 10 0 M
vpc         Ref         Trc         X-Value         Function         Function Result           M1         1         1.751711 GHz         16.24 dBm         Occ Bw         4.172446187 MH				1001 pt	s	1	.0 MHZ/			Span 10.0 Mi
M1 1 1.751711 GHz 16.24 dBm Occ Bw 4.172446187 MH			V Value		V Voluo		Eurotion		Eurotion E	ooult
				7 1		Occ Bw	Function			
T1 1 1.7505179 GHz 6.80 dBm Occ Bw Centroid 1.752604173 GH		1			6.80 dBm		ntroid			

Note: Expanded measurement uncertainty is U = 3428Hz, k = 2



# A.5 EMISSION BANDWIDTH

### Reference

FCC: CFR Part 2.1049, 22.917, 24.238, 27.53(g).

### A.5.1Emission Bandwidth Results

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

## WCDMA Band II (-26dBc BW)-QPSK

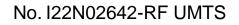
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)
1852.4	4.68
1880.0	4.66
1907.6	4.67

### WCDMA Band II

### Channel 9262-Emission Bandwidth (-26dBc BW)



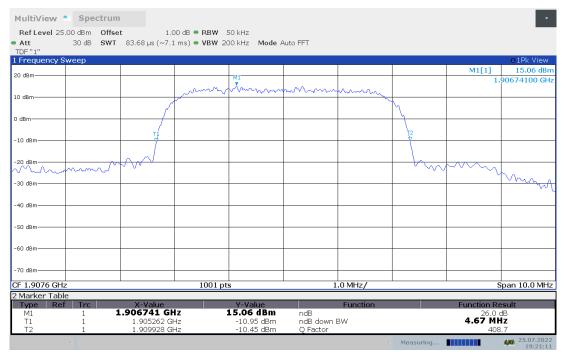
### Channel 9400-Emission Bandwidth (-26dBc BW)





Att	.00 dBm Offs 30 dB SWT	Г 83.68 µs (~7.1 п	dB = RBW 5		uto FET				
DF "1"	30 ab - 5111	00.00 p3 (07.11)	13) • • • • • • • 20	O KINZ INIOUC A	400111				
Frequency S	weep								●1Pk View
I dBm								M1[1]	15.53 dB
donn				X				1.	.87911100 GI
dBm			Summe	mmm	mm	mm			
ubili		l N					M.		
10							$\mathbf{X}$		
dBm									
		Ţ					12 7		
0 dBm———									
		M					$\sim \sim \sim$		
0 dBm	m	Aur					× v	M	honor
	, °	v r-v-						www	0. 6
0 dBm									-
0 dBm									
0 dBm									-
D dBm		+							+
0 dBm									+
1.88 GHz			1001 pts		1	.0 MHz/			∣ Span 10.0 M⊦
Marker Tabl	e		1001 pts			10 171127		`	2001 1010 Mil
Type Ref		X-Value		Y-Value		Function		Function R	esult
M1	1	1.879111 GHz		L5.53 dBm	ndB			26.0	dB
T1 T2	1	1.877672 GHz 1.882328 GHz		-10.07 dBm -10.02 dBm	ndB down E Q Factor	ЗW		4.66 MI 403	

### Channel 9538-Emission Bandwidth (-26dBc BW)





### WCDMA Band II (-26dBc BW)-16QAM

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)
1852.4	4.67
1880.0	4.68
1907.6	4.67

#### WCDMA Band II

#### Channel 9262-Emission Bandwidth (-26dBc BW)



## Channel 9400-Emission Bandwidth (-26dBc BW)



## Channel 9538-Emission Bandwidth (-26dBc BW)



TDF "1" I Frequency	Sweep	1 8	,						o1Pk View
0 dBm								M1[1]	15.58 dB
o abiii			mmm	м <u>і</u>	mm	0		1.	90672100 G
) dBm			A manual and the second	·		month	h		
		1					2		
dBm							1		
LO dBm		T1 ₹					₹2		
20 dBm		N					han		
J V har	mon	l ×						$\sim$	m
30 dBm								www	
40 dBm									
50 dBm									
50 dBm									
70 dBm									
F 1.9076 GF	Hz		1001 pt	S	1	.0 MHz/		5	span 10.0 Mł
Marker Tab							-		
Type Re M1		X-Value L.906721 GH	z	Y-Value 15.58 dBm	ndB	Function		Function Re 26.0 (	
T1	1	1.905262 Gł		-9.78 dBm	ndB down	BW		4.67 MH	Îz



### WCDMA Band V(-26dBc BW)-QPSK

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)
826.4	4.670
836.6	4.67
846.6	4.68

### WCDMA Band V

### Channel 4132-Emission Bandwidth (-26dBc BW)



## Channel 4183-Emission Bandwidth (-26dBc BW)



## Channel 4233-Emission Bandwidth (-26dBc BW)





MultiView									Ť
Att		set 1.4 T 83.68 µs (~7.2			uto FET				
TDF "1"	50 05 30	1 00.00 µs (***.	r ms) - 060 20	JO KINZ IMIOUE F	atorri				
Frequency	Sweep								●1Pk View
0 dBm				A1				M1[1]	16.18 dBr
				X.				1 1	845.63100 MH
0 dBm			many	· ·····	mm	mm			
0 00111		(	,				K		
dBm		ſ					7		
dom							7		
10 dBm		Ţ					12 V		
10 0.011									
20 dBm									
-		/ / V					m		
30/dBm	mm	nor					m	A	m
									$1^{\circ}$ $\sim$
40 dBm									
10 0011									
50 dBm									
50 0011									
60 dBm									
70 dBm									
F 846.6 MH:			1001 pt	s	1	.0 MHz/			Span 10.0 MH
Marker Tak		X-Value		Y-Value		Function	_	Function R	agult
туре ке M1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	845.631 MH	z	16.18 dBm	ndB	Function		26.0	
Τ1	ĩ	844.242 MH	Ηz	-10.36 dBm	ndB down	BW		4.68 MI	Hz
T2	1	848.928 MH	Ηz	-9.70 dBm	Q Factor			180	J.5

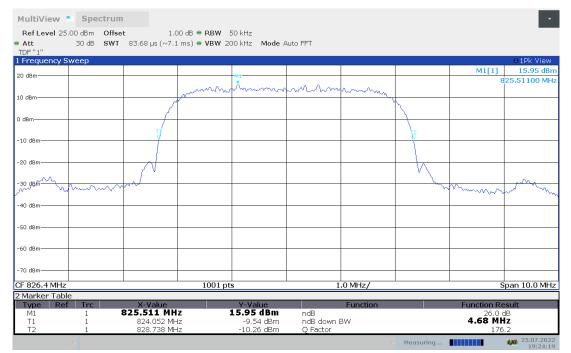


### WCDMA Band V(-26dBc BW)-16QAM

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)
826.4	4.68
836.6	4.68
846.6	4.70

### WCDMA Band V

### Channel 4132-Emission Bandwidth (-26dBc BW)



## Channel 4183-Emission Bandwidth (-26dBc BW)



## Channel 4233-Emission Bandwidth (-26dBc BW)





MultiView	Spectrum								
	5.00 dBm Offse		10 dB = RBW 5	50 kHz					
Att		83.68 µs (~7.1			Auto FFT				
TDF "1"									
1 Frequency	Sweep								o1Pk View
20 dBm				и1				M1[1]	15.54 dBm 845.64100 MHz
			, march	human					345.64100 MHz
10 dBm						to more and			
							5		
0 dBm									-
		т					T2		
-10 dBm		+ +					1		-
-20 dBm									
~~~~		00					V VA		
-30^dBm	mann	W.V					V Ly.	mm	Am
									- · · ·
-40 dBm									
-50 dBm									
-60 dBm									+
-70 dBm									+
CF 846.6 MHz	,		1001 pt	<u> </u> s	1	.0 MHz/	1		Span 10.0 MHz
2 Marker Tab			1001 pt			,			
Type Re	f Trc	X-Value		Y-Value		Function		Function R	
M1		845.641 MH		15.54 dBm	ndB			26.0 4.70 MI	dB
T1 T2	1	844.242 MH 848.938 MH		-10.09 dBm -10.28 dBm	ndB down I O Factor	3VV		4.70 MI 180	
14	7	040.000 Mi		10.20 0011	Q 1 00001	_	Measuring		25.07.2022
						· · · · · · · · · · · · · · · · · · ·	measuring		19:25:38

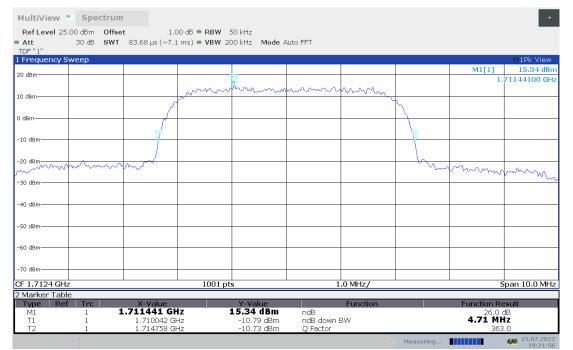


WCDMA Band IV(-26dBc BW)-QPSK

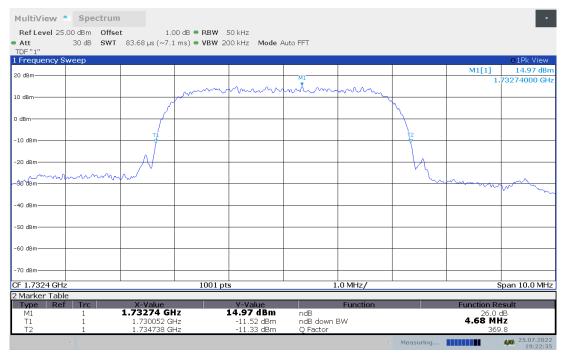
Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)
1712.4	4.71
1732.4	4.68
1752.6	4.68

WCDMA Band IV





Channel 1412-Emission Bandwidth (-26dBc BW)



Channel 1513-Emission Bandwidth (-26dBc BW)



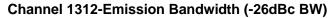
MultiView	- Spectrun	1							•
Ref Level 2	5.00 dBm Offse	h 10	0 dB = RBW _ 5	50 kHz					
 Att 		83.68 µs (~7.1			Auto FET				
TDF "1"	00 00 0111	00.00 μ0 (7.1		John L Mode /					
1 Frequency	Sweep								o1Pk View
								M1[1]	15.77 dBm
20 dBm					M1			1.	75320900 GHz
			mm	mmm	mmm	mm.			
10 dBm		(~~~			- · · ···/			
							h		
0 dBm									
-10 dBm		4					¥ ²		
10 0011									
-20 dBm		1 7 V					1/2		
mm	mm	m					h.		
-30 dBm							~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	\sim	
									w
-40 dBm									
-50 dBm									
-50 UBIN									
-60 dBm		1							
-70 dBm									
05.1.7504.01			1001						10.0 10
CF 1.7526 GH			1001 pt	5	1	.0 MHz/			Span 10.0 MHz
2 Marker Tab		V 11-1		N 11-1				E	
Type Re M1		X-Value 1.753209 GH	17	Y-Value 15.77 dBm	ndB	Function		Function Re 26.0	
T1	1 .	1.750252 Gł		-10.06 dBm	ndB down l	RW		4.68 MI	iz I
T2	1	1.754938 G		-9.87 dBm	Q Factor			374	
							5.4 m m m m m m m		25.07.2022
							Measuring		19:23:14

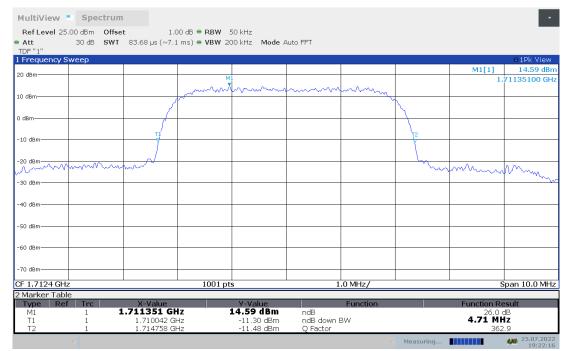


WCDMA Band IV(-26dBc BW)-16QAM

Frequency(MHz)	Emission Bandwidth (-26dBc BW)(MHz)
1712.4	4.71
1732.4	4.71
1752.6	4.68

WCDMA Band IV





Channel 1412-Emission Bandwidth (-26dBc BW)



Channel 1513-Emission Bandwidth (-26dBc BW)



Frequency Sweep)					o1Pk View
dBm						M1[1] 15.96 dB
		mm	mmm	mm		1.75171100 G
dBm		1			1	
Bm	/					
) dBm					T2	
) dBm						
MBm-	mannen				V ~	ma m
usm						and the second s
dBm						
dBm						
dBm						
I dBm						
1.7526 GHz		1001 pts		1.0 MHz/		Span 10.0 Mł
				210 10112/		

Note: Expanded measurement uncertainty is U = 3428Hz, k = 2



A.6 BAND EDGE COMPLIANCE

Reference

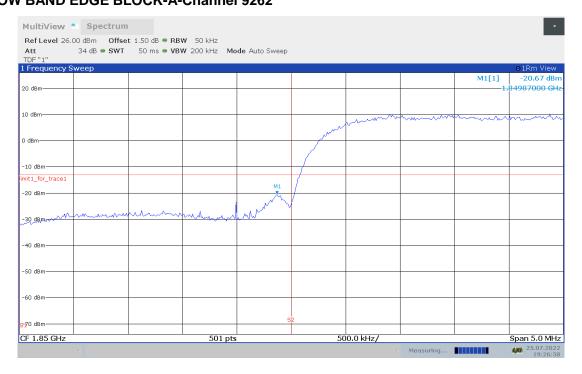
FCC: CFR Part 2.1051, 22.917, 24.238, 27.53(h).

A.6.1 Measurement limit

On any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log (P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm. A relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

A.6.2 Measurement result

Only worst case result is given below WCDMA Band II LOW BAND EDGE BLOCK-A-Channel 9262



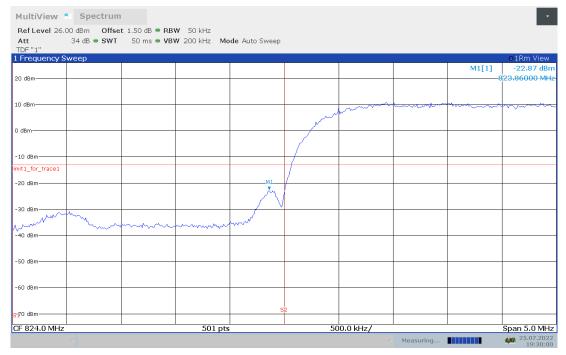


HIGH BAND EDGE BLOCK-C–Channel 9538

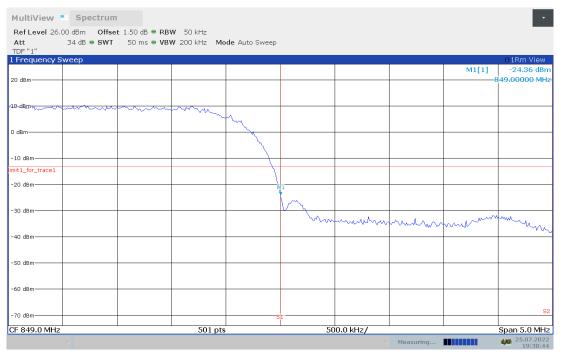
MultiView	Spectrum								•
		t 1.50 dB 🖷 RBV							_
Att TDF "1"		50 ms 🖷 VBV	V 200 kHz Mo	de Auto Sweep					
1 Frequency S	weep				I				●1Rm View
								M1[1]	-22.47 dBm 91010000 GHz-
20 dBm								1.	91010000 GHZ-
10 dBm	mon	mmm	mm						
				m y					
0 dBm				- 4					
				<u>کر</u>					
-10 dBm									
limit1_for_trace1									
-20 dBm					_M1				
				, i	march a				
-30 dBm					WWW MAN	Margan	AMM MAR	mmun	Analy of the .
						- 0 - 0 Y	· · · · · · · · · · · · · · · · · · ·	h. Marth and	LI MIMIMM
-40 dBm									
-50 dBm									
So upin									
60 d0m									
-60 dBm									
									S2
-70 dBm				S	1				
CF 1.91 GHz			501 pts		50	0.0 kHz/			Span 5.0 MHz
							Measuring		25.07.2022 19:27:42



WCDMA Band V LOW BAND EDGE BLOCK-A-Channel 4132

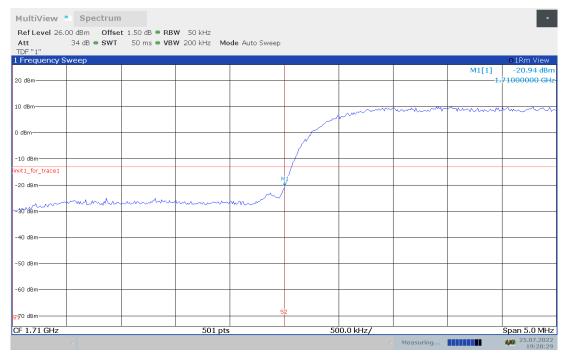


HIGH BAND EDGE BLOCK-C-Channel 4233

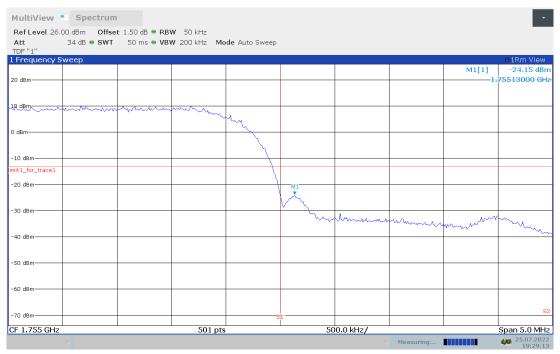




WCDMA Band IV LOW BAND EDGE BLOCK-A -Channel 1312



HIGH BAND EDGE BLOCK-C-Channel 1513



Note: Expanded measurement uncertainty is U = 0.49 dB(100KHz-2GHz)/1.21 dB (2GHz-26.5GHz), k = 1.96



A.7 CONDUCTED SPURIOUS EMISSION

Reference

FCC: CFR Part 2.1051, 22.917, 24.238, 27.53(h).

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

- Determine frequency range for measurements: From CFR 2.1051 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 9 GHz, data taken from 10 MHz to 25 GHz.
- 2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

WCDMA Band II Transmitter

Channel	Frequency (MHz)
9262	1852.4
9400	1880.0
9538	1907.6

WCDMA Band V Transmitter

Channel	Frequency (MHz)
4132	826.4
4183	836.6
4233	846.6

WCDMA Band IV Transmitter

Channel	Frequency (MHz)
1312	1712.4
1412	1732.4
1513	1752.6

A.7.2 Measurement Limit

Part 24.238, Part 22.917 and Part 27.53(h) specify that the power of any emission outside of the authorized

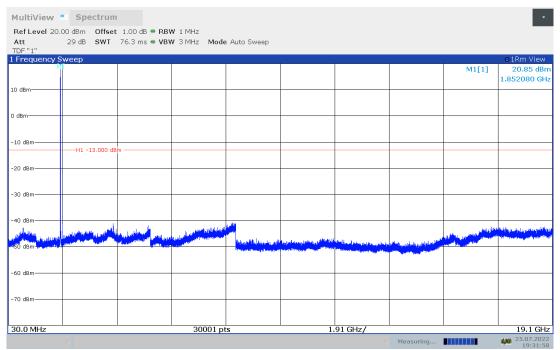
operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.



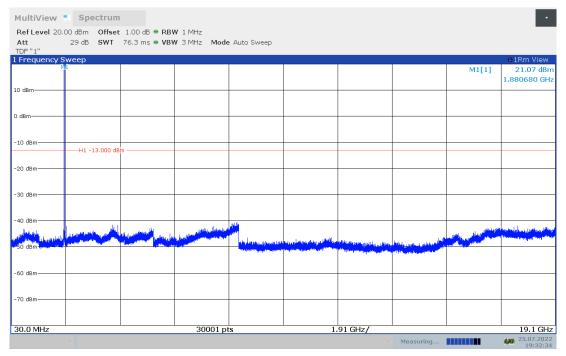
A.7.3 Measurement result Only worst case result is given below WCDMA Band II Channel 9262: 30MHz –19.1GHz Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



Channel 9400: 30MHz –19.1GHz

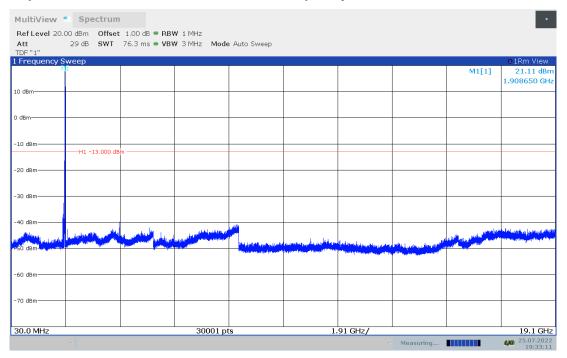
Spurious emission limit –13dBm.





Channel 9538: 30MHz –19.1GHz

Spurious emission limit -13dBm.



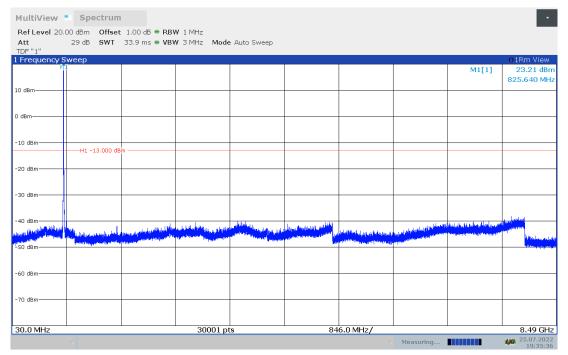


WCDMA Band V

Channel 4132: 30MHz –8.49GHz

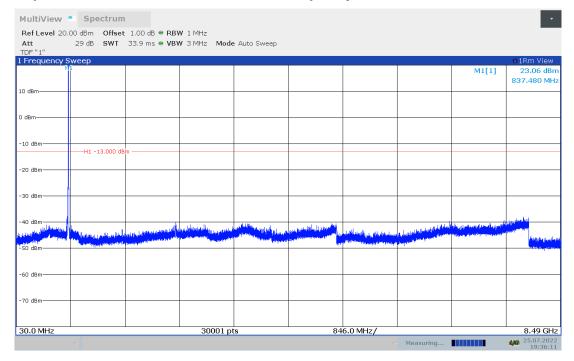
Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



Channel 4183: 30MHz -8.49GHz

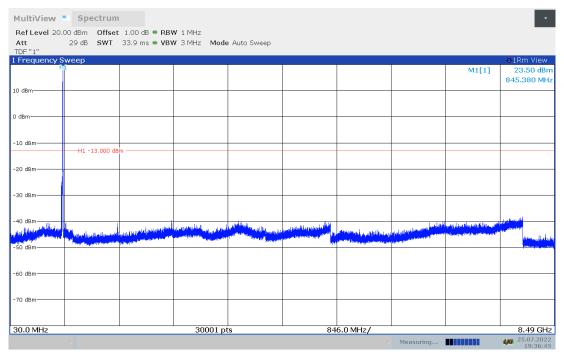
Spurious emission limit –13dBm.





Channel 4233: 30MHz -8.49GHz

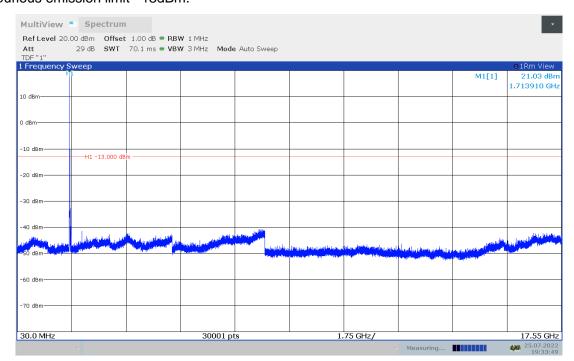
Spurious emission limit –13dBm.





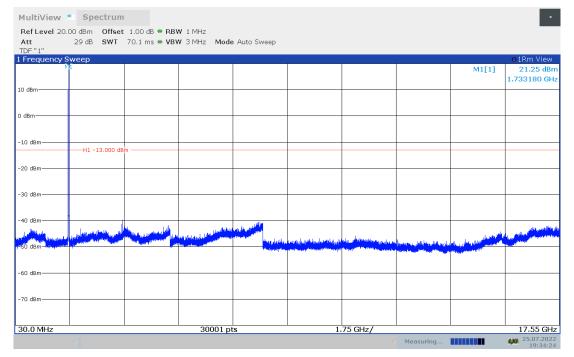
WCDMA Band IV Channel 1312: 30MHz –17.55GHz

Spurious emission limit –13dBm.



Channel 1412: 30MHz –17.55GHz

Spurious emission limit -13dBm.

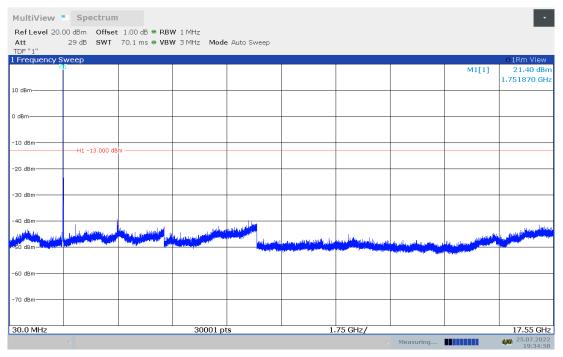




Channel 1513: 30MHz –17.55GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



Note: Expanded measurement uncertainty is U = 0.49 dB(100KHz-2GHz)/1.21 dB (2GHz-26.5GHz), k = 1.96



A.8 PEAK-TO-AVERAGE POWER RATIO

Reference

FCC: CFR Part 24.232, 27.50(d), KDB971168 D01.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

a)Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval to 1 ms

e)Record the maximum PAPR level associated with a probability of 0.1%

A.8.1 Measurement limit

not exceed 13 dB

A.8.2 Measurement results

Only worst case result is given below

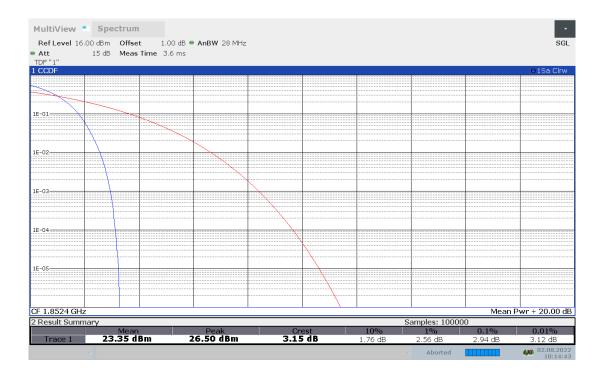
WCDMA Band II (PAPR)-QPSK

Frequency(MHz)	Peak-To-Average Power Ratio(PAPR)(dB)
1852.4	2.94
1880.0	3.22
1907.6	2.92

WCDMA Band II

Channel 9262-Peak-To-Average Power Ratio(PAPR)-QPSK



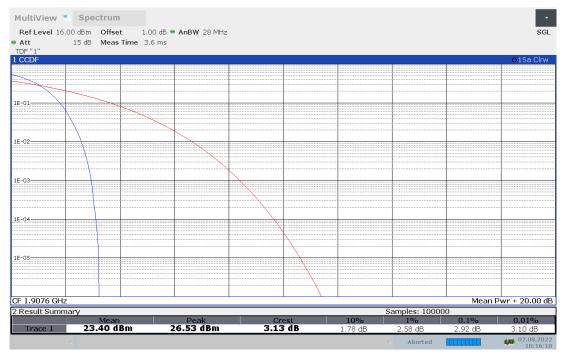






Channel 9400- Peak-To-Average Power Ratio(PAPR)-QPSK





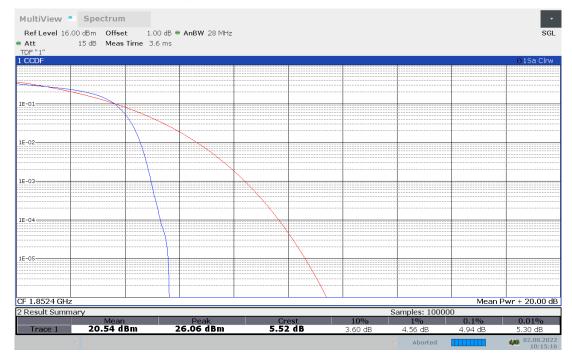


WCDMA Band II (PAPR)-16QAM

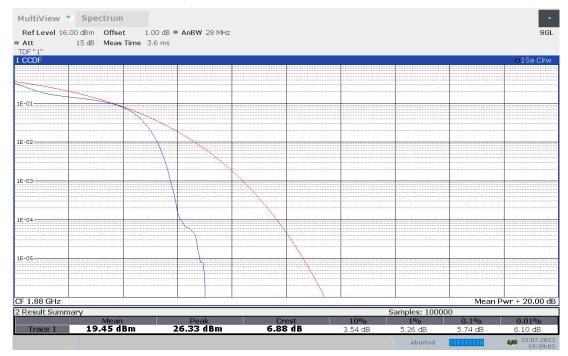
Frequency(MHz)	Peak-To-Average Power Ratio(PAPR)(dB)
1852.4	4.94
1880.0	5.74
1907.6	5.06

WCDMA Band II

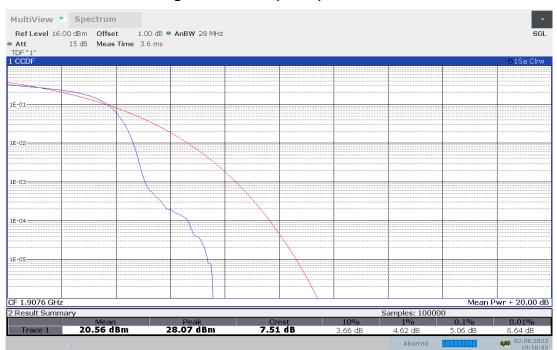
Channel 9262- Peak-To-Average Power Ratio(PAPR)-16QAM



Channel 9400- Peak-To-Average Power Ratio(PAPR)-16QAM







Channel 9538- Peak-To-Average Power Ratio(PAPR)-16QAM

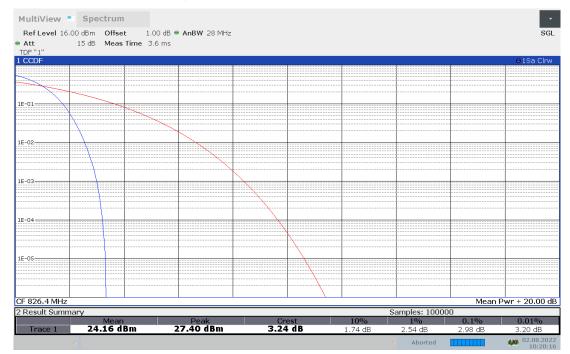


WCDMA Band V (PAPR)-QPSK

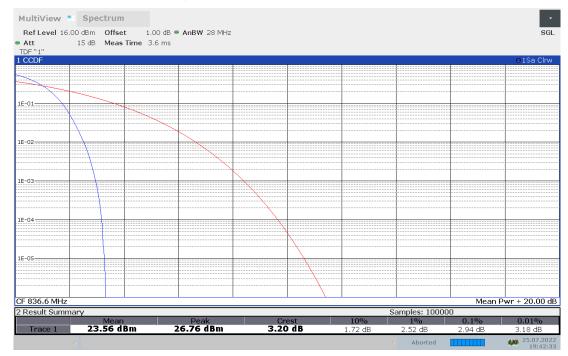
Frequency(MHz)	Peak-To-Average Power Ratio(PAPR)(dB)
826.4	2.98
836.6	2.94
846.6	2.92

WCDMA Band V

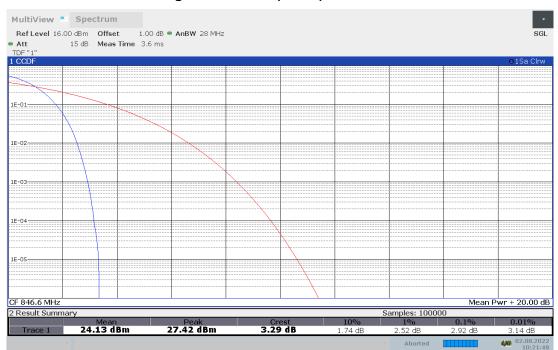
Channel 4132- Peak-To-Average Power Ratio(PAPR)-QPSK



Channel 4183- Peak-To-Average Power Ratio(PAPR)-QPSK







Channel 4233- Peak-To-Average Power Ratio(PAPR)-QPSK

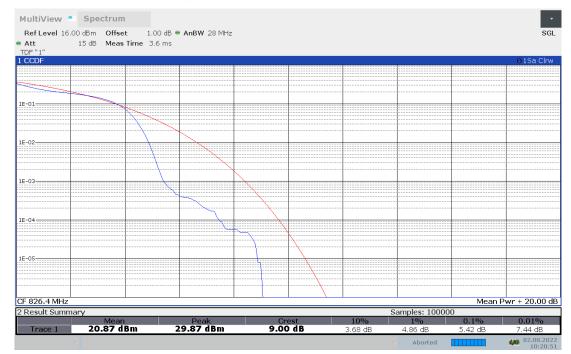


WCDMA Band V (PAPR)-16QAM

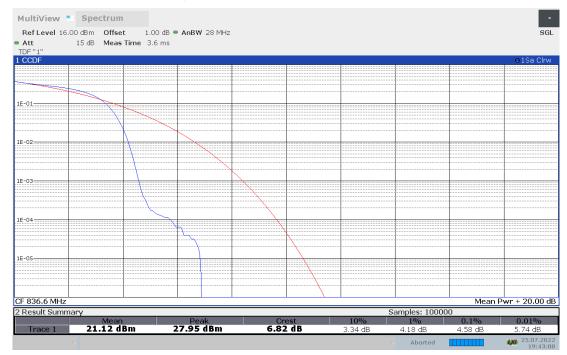
Frequency(MHz)	Peak-To-Average Power Ratio(PAPR)(dB)
826.4	5.42
836.6	5.74
846.6	5.58

WCDMA Band V

Channel 4132- Peak-To-Average Power Ratio(PAPR)-16QAM

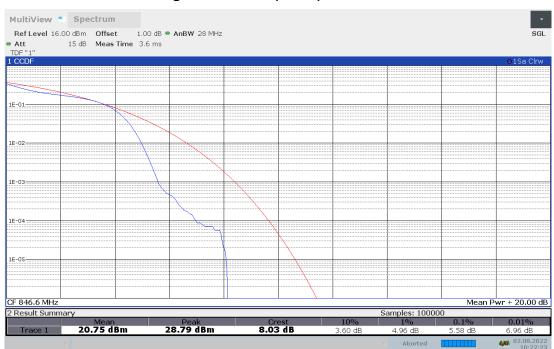


Channel 4183- Peak-To-Average Power Ratio(PAPR)-16QAM









Channel 4233- Peak-To-Average Power Ratio(PAPR)-16QAM



WCDMA Band IV (PAPR)-QPSK

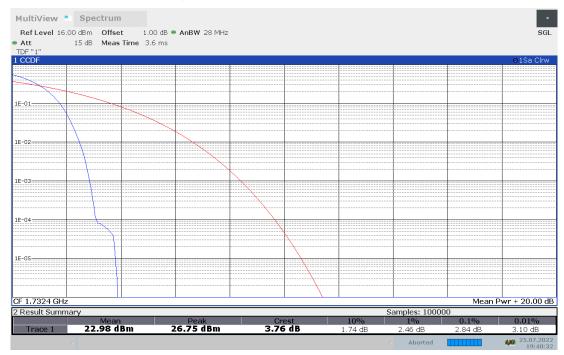
Frequency(MHz)	Peak-To-Average Power Ratio(PAPR)(dB)
1712.4	2.58
1732.4	2.84
1752.6	2.88

WCDMA Band IV

Channel 1312- Peak-To-Average Power Ratio(PAPR)-QPSK











Channel 1513- Peak-To-Average Power Ratio(PAPR)-QPSK



WCDMA Band IV (PAPR)-16QAM

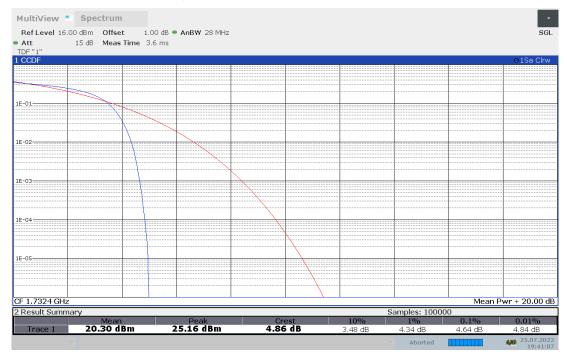
Frequency(MHz)	Peak-To-Average Power Ratio(PAPR)(dB)
1712.4	4.62
1732.4	4.64
1752.6	5.74

WCDMA Band IV

Channel 1312- Peak-To-Average Power Ratio(PAPR)-16QAM



Channel 1412- Peak-To-Average Power Ratio(PAPR)-16QAM







Channel 1513- Peak-To-Average Power Ratio(PAPR)-16QAM

Note: Expanded measurement uncertainty is U = 0.48 dB, k = 2

END OF REPORT